



NRC-00-051

**Wisconsin Public Service Corporation**  
(a subsidiary of WPS Resources Corporation)  
Kewaunee Nuclear Power Plant  
North 490, Highway 42  
Kewaunee, WI 54216-9511  
920-388-2560

July 6, 2000

10 CFR 50.73

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Ladies/Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
Reportable Occurrence 2000-009-00

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System," the attached Licensee Event Report (LER) for reportable occurrence 2000-009-00 is being submitted. This report does not contain any new commitments.

Sincerely,

*DM Marchi for MLM*  
Mark L. Marchi  
Vice President-Nuclear

GIH

Attach.

cc - INPO Records Center  
US NRC Senior Resident Inspector  
US NRC, Region III

*TE22*

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

FACILITY NAME (1)

Kewaunee Nuclear Power Plant

DOCKET NUMBER (2)

05000305

PAGE (3)

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TITLE (4)

Manual Reactor Trip Initiated - Failure of Reactor Coolant Pump Temperature Indication Required Action to Trip the Pump

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
06	06	2000	2000	-- 009	-- 00	07	06	2000		05000
OPERATING MODE (9) N			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
			20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(ii)		50.73(a)(2)(viii)	
POWER LEVEL (10) 37			20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		50.73(a)(2)(x)	
			20.2203(a)(2)(i)		20.2203(a)(3)(iii)		50.73(a)(2)(iii)		73.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)		X 50.73(a)(2)(iv)		OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A	
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)			

## LICENSEE CONTACT FOR THIS LER (12)

NAME

Gary I Harrington - Plant Licensing Leader

TELEPHONE NUMBER (Include Area Code)

(920) 388-8559

## COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	AB	DET	M175	Y					

## SUPPLEMENTAL REPORT EXPECTED (14)

YES

(If yes, complete EXPECTED SUBMISSION DATE).

X

NO

EXPECTED  
SUBMISSION  
DATE (15)

MONTH

DAY

YEAR

## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On June 6, 2000, while operating at 37% power, a manual trip was initiated in response to an abnormal high temperature indication of the A Reactor Coolant Pump (RXCP). At the time of the trip, the plant was in a chemistry hold at reduced power following a recently completed refueling outage. The indicated increased temperature was on the RXCP bearing water outlet temperature that would be indicative of a RXCP radial bearing related problem. Plant procedures prohibit operating the RXCP with bearing temperature indication in excess of 225 degrees F. Subsequent to the Operators noting temperature indication exceeding 225 degrees, the reactor and affected pump were tripped. The cause of the increased temperature indication was a failed resistance temperature detector (RTD).

The plant response to the trip was normal. All systems operated as designed.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

**DESCRIPTION OF EVENT**

On June 6, 2000, while operating at 37% power, a manual trip was initiated in response to an abnormal high temperature indication on the A Reactor Coolant Pump (RXCP)[P]. At the time of the trip, the plant was in a chemistry hold at reduced power following a recently completed refueling outage. The indicated increased temperature was on the RXCP bearing water outlet temperature that would be indicative of a RXCP radial bearing related problem.

The operating shift noted the increasing trend in pump bearing water outlet temperature indication [TI] when the plant process computer [CPU] alarmed [TA] at 170 degrees F at approximately 2243. From a historical computer data plot of the temperature indication, prior to the alarm, the temperature indication was steady at just under 150 degrees F until around 2000. At 2000, temperature began to increase about 3 – 5 degrees over the next 1 and ½ hours. At about 2130, temperature took a step change, approximately 3 degrees, and continued to trend upward another 5 degrees over the next 45 minutes. At this point, approximately 2215, the temperature indication began to increase exponentially. The process computer point alarm actuated within the next ½ hour. The plant process computer alarm feature continues to actuate at increasing increments. For the affected instrument the alarm printer [PLOT] recorded 10 degree F incremental changes. The following data was recorded on the alarm printer:

- 22:42:58 – 170.6 degrees F
- 22:53:58 – 180.4 degrees F
- 22:59:59 – 191.7 degrees F
- 23:02:59 – 201.8 degrees F
- 23:05:59 – 211.4 degrees F
- 23:08:59 – 221.8 degrees F
- 23:10:35 – Reactor Trip

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At the onset of identifying the temperature increase, the operating shift attempted to confirm the indication using other process computer and control room indications. In addition, an Instrument and Control (I&C) Engineering support staff member was on site and assisted the operating shift. Readings obtained by I&C from the relay room confirmed that the indication on the computer and in the control room was indicative of the signal provided by the field circuitry. Collectively, the operating shift and engineering support could not refute the available indication before the upper operational limit for the bearing temperature was reached.

Plant procedures prohibit operating the RXCP with bearing temperature indication in excess of 225 degrees F and prohibit operation of the reactor [RCT] unless both RXCPs are running. Subsequent to the Operators noting temperature indication exceeding 225 degrees, the reactor and affected pump were manually tripped. At the time of the trip, a back-down in power had already been initiated and was in process.

CAUSE OF THE EVENT

The cause of the increased temperature indication was a failed resistance temperature detector (RTD)[DET]. The RTD failure caused an increasing temperature trend on the plant process computer and the control boards. Subsequent to the trip and replacement of the RTD, the detector was taken to the Instrument and Control shop where the condition noted by the preceding computer trend data was reproduced on the bench. The cause of the detector failure is indeterminate.

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**ANALYSIS OF THE EVENT**

This event is being reported under 10CFR50.73(a)(2)(iv), any event or condition that resulted in an ESF or reactor protection system actuation. This event was initially reported via the Event Notification System (ENS) on June 6, 2000. Other than the transient the plant underwent in response to a turbine/reactor trip there were no adverse consequences to the trip. All plant equipment responses were normal with the exception of an unexplained radiation monitor [MON] momentary increase in indication. There were no radiological releases or challenges to plant personnel or public health and safety.

The radiation monitor that increased was the letdown system [CB] radiation monitor, R-9. It went from its normal reading of approximately 25 mrem per hour to 100 mrem. The increase peaked approximately one minute after it began and returned to the normal reading within the next 3 minutes.

As part of the trip, according to the operating shift personnel, the letdown system was automatically isolated almost immediately in response to a low pressurizer [PZR] level. The low level transient on the pressurizer was normal and expected based on the reactor coolant system (RCS)[AB] temperature change in response to the trip. Letdown isolation occurred approximately 15 minutes before the R-9 radiation level indication increased. Consequently, there was no flow past the detector when the R-9 transient occurred.

In response to the increased radiation monitor indication the operating shift contacted the Health Physics (HP) group and requested surveys be conducted. The HP surveys revealed no unusual radiation doses. Consequently, based on the nature of the peak, the time of the peak, and the letdown piping surveys, the increased indication is believed to be an unexplainable perturbation of the radiation monitor.

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With regard to the failed RTD, there were no indications from other pump parameters that could be used to support the increase in temperature. The temperature indication trending up led the operating and engineering support staff to believe the indication was valid. From the experience of those on-site, abrupt temperature changes are more typical of a failed RTD. This, along with the fact that the temperature quickly approached the procedure operating limit, led the shift personnel to take the conservative action of tripping the plant in response to an abnormal RXCP operating condition.

**CORRECTIVE ACTIONS**

- Shortly after identifying the increasing trend in temperature, the corrective actions prescribed by procedure were initiated. These actions included increasing RXCP seal injection flow and initiating a plant power reduction.
- The failed RTD was replaced.
- The plant was restarted and placed back on-line.

**ADDITIONAL INFORMATION**

During the recent refueling outage, the failed RTD was removed and reinstalled to support scheduled RXCP maintenance. Subsequent to reinstalling the RTD, it was successfully tested and returned to service.

The failed RTD is manufactured by McGraw-Edison – Co. Model number 166-06035-7604.

The failure of the RTD is considered a Maintenance Rule Functional Failure. This event does not constitute a Safety System Functional Failure.

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SIMILAR EVENTS

None.